MOSSY CREEK – NORTH RIVER UMBRELLA MITIGATION BANK

Prospectus

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Introduction

The Bank Sponsor, Mossy Creek Cattle, LLC, proposes to establish an umbrella mitigation bank (the "Bank"), to provide offset compensation for the unavoidable loss of jurisdictional Waters of the United States, State Waters, and their associated ecological functions and values related to permitted impacts within the Bank's Geographic Service Area (GSA). This phase of the Bank, to be known as Mossy Creek-North River Umbrella Mitigation Bank (MCNRUMB), is contained within approximately 1266.23 acres of nine, individual parcels including portions of Mossy Creek, Long Glade Creek, Freemason Run, North River and associated unnamed perennial and intermittent tributaries. MCNRUMB is located in Augusta County, Virginia approximately ten miles north of the city of Staunton within the Upper North River sub-basin, which is part of the South Fork Shenandoah River watershed and defined by hydrologic unit code (HUC) 02070005. The Bank's GSA will include HUC 02070005, as well as the four additional HUCs, 02070001 (South Branch Potomac River), 02070006 (North Fork Shenandoah River basin), 02070007 (Shenandoah River basin), and 02070004 (Conococheague-Opequon). This mitigation banking project is part of a larger watershed restoration effort initiated by the bank sponsors and public and private entities within the watershed.

The project is known as the North River Watershed Restoration project and is a watershed management approach to ecological and water quality restoration in the North River watershed of Augusta County, Virginia. This watershed management approach is based on the "Conservation by Design" framework developed by The Nature Conservancy, which follows an adaptive management structure of setting goals and priorities, developing strategies, taking action and measuring results. The project watershed is being defined as the headwaters of the North River from Shenandoah Mountain to the Town of Bridgewater including the sub-watersheds of Freemason Run, Mossy Creek and Long Glade Creek. This overall watershed area includes Shenandoah River Priority Conservation Areas such as Central Appalachian Mixed Hardwood Forest Matrix, Montane Non-Alluvial Wetlands, and Small Ridge and Valley Streams and Rivers. The overall effort is being undertaken in coordination with numerous public and private entities including the U.S. Fish and

Wildlife Service, Augusta County Community Development, Headwaters Soil and Water Conservation District, Trout Unlimited, Virginia Wilderness Committee, Valley Conservation Council, Virginia Conservation Network and additional willing land owners in the region. The overall project goal is to improve water quality for the trout fishery and other aquatic species while ensuring the continued use and viability of agriculture within the watershed.

Trout Unlimited and the United States Fish and Wildlife Service are in the process of designing another phase of the overall watershed restoration project downstream of the proposed MCNRUMB. That project will remove an aging dam and restore approximately 2,500 linear feet of stream with an overall goal of restoring native brook trout to Mossy Creek.

Goals and strategies of the MCNRUMB will focus on improving the ecological health of the catchments and sub-watersheds of Mossy Creek, Long Glade Creek, Freemason Run and Upper North River and fulfill the need for ecosystem restoration within these areas. In addition, MCNRUMB will help improve water quality and headwater hydrology for the Upper North River watershed, the South Branch of the Potomac River watershed, the South Fork-Shenandoah River sub-basin, and the Shenandoah River basin.

Site Selection

The Virginia Department of Game and Inland Fisheries has labeled Mossy Creek as "Virginia's most famous fly fishing destination." Mossy Creek and its tributaries are also part of Trout Unlimited's Watershed Restoration – Home Rivers Initiative for the Shenandoah Headwaters. TU's Shenandoah Headwaters Home Rivers Initiative focuses its restoration and conservation efforts on headwater spring creeks and mountain tributaries in the Shenandoah Valley of Virginia. The current focus is on five priority sub-watersheds in the valley, which includes Mossy Creek and other tributaries of the North River.

Currently, there are Total Maximum Daily Loads (TMDLs) for E. coli, Fecal Coliform and Benthic-Macroinvertebrates Bioassessments present for Mossy Creek, E. coli and Fecal Coliform present for Long Glade Creek and E. coli, Fecal Coliform, pH, and Benthic-Macroinvertebrates Bioassessments impairments for the North River within the Mount Solon and Bridgewater area (see Appendix A). The Upper North River watershed is the drinking water supply for the Town of Bridgewater and the City of Harrisonburg. MCNRUMB will contribute improved water quality to the Upper North River watershed and the South Fork-Shenandoah River sub-basin and assist in removing non-point

sources related to the identified impairments. MCNRUMB will also complement ongoing water quality initiatives that are part of the Mossy Creek, Long Glade Creek and Naked Creek Water Qualtiy Improvement Plan (June 18, 2009) to address the existing TMDLs. Specifically the Bank will advance the stated goal of reducing sediment from channel erosion by 75% through restoration activities.

Currently, there is only one existing mitigation bank located within the South Fork- Shenandoah River sub-basin (HUC 02070005), according to the Regional Internet Banking Information Tracking System (RIBITS).

MCNRUMB will include stream restoration, stream enhancement, wetland restoration, wetland enhancement, and planting and preservation of 100' – 200' of riparian buffers along Mossy Creek, Long Glade Creek, Freemason Run, North River, and the unnamed tributaries within the properties. Opportunities for restoration of approximately 15,340 linear feet of streams, enhancement of approximately 7,419 linear feet of streams and preservation/buffer planting of approximately 3,216 linear feet of stream exists onsite. There are also opportunities for restoration of approximately 10 acres of wetlands and approximately16 acres of preservation/buffer planting of existing emergent wetlands.

An umbrella mitigation banking instrument (UMBI) will be developed by the Sponsor's agent to establish the Bank. A managing entity will be created by the Sponsor to acquire all easements associated with the Bank. All the properties included in the MCNRUMB are managed by the Sponsor and owned by the Sponsor and his family except for the Byerly Farm, which the owner, Thomas Byerly, is a willing participant and investor in the Bank. The UMBI and the Bank will be established, operated, and maintained in accordance with the Code of Virginia Section 33.1-223.2.1 *Wetland Banking and Compensatory Mitigation for Losses of Aquatic Resources; Final Rule – Parts 33 CFR 325 and 332 (Department of the Army; Corps of Engineers) & Parts 40 CFR Part 230 (Environmental Protection Agency).*

Methods

Baseline information including, but not limited to the physical, biological, and chemical characteristics of the properties and the surrounding areas was collected to determine the

ecological suitability of the site to achieve the goals and objectives of the Mossy Creek Umbrella Mitigation Bank. The following resources were utilized to compile baseline information prior to field investigations:

- Natural Resource Conservation Service (NRCS) Augusta County Soil Survey
- United States Geologic Survey (USGS) Briery Branch and Parnassus Quadrangle 7.5-minute topographic map
- U.S Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI)
- USFWS Augusta County Threatened/Endangered Species List
- Augusta County Comprehensive Plan and Future Land Use Plan
- Augusta County Tax Map
- Department of Game and Inland Fisheries (DGIF) Fish and Wildlife Information Service (FWIS)
- Department of Conservation and Recreation (DCR) Natural Heritage Data Explorer (NHDE)
- NRCS Geo-Spatial Data Gateway (GSDG)
- Augusta County Deed Book information for subject properties
- Virginia Department of Environmental Quality (DEQ) 2012 303(d) Impaired Waters List

The location of all Waters of the United States (aquatic resources) was determined by completing a delineation, which was then followed by a preliminary jurisdictional determination with Vinny Pero of the U. S. Army Corps of Engineers, Western Virginia Field Office and Eric Willard of the Department of Environmental Quality. The Preliminary Jurisdictional Determination was dated July 5, 2012.

A boundary survey of the Bank properties and a topographic survey consisting of one foot contour intervals will be completed for a 400-foot wide corridor within all drainage ways where Waters of the U.S. are present and where restoration practices are anticipated prior to the first submittal of the Draft Mitigation Banking Instrument. Geomorphic surveys will be completed on all streams to measure channel dimension, pattern, and longitudinal profile. From this information, the physical stability and stream type (using Rosgen Classification System for Natural Rivers) will be determined and assessed.

Ecological conditions of the aquatic resources were documented using the Unified Stream Methodology Stream Assessment Form #1 (see Appendix D).

Due to the site's geologic location, the sponsor's agent proposes to complete a thorough site visit with Wil Orndorff (Karst Protection Coordinator of DCR Natural Heritage) to review the site and assess any effects (positive or negative) on karst features that may result from the proposed project.

The Bank Sponsor's agents have met with the Augusta County Office of Community Development to present the proposed project and evaluate the level of compatibility with the Augusta County Comprehensive Plan. The County staff has affirmed that the proposed project is compatible with the goals and policies of the Comprehensive Plan.

To determine the current ecological health of the aquatic biological communities and water quality, the Sponsor's agent proposes to establish bio-assessment stations. Benthic macroinvertebrate communities will be sampled at a minimum of one station per stream reach using the Environmental Protection Agency's (EPA) Rapid Bioassessment Protocol (RBP) II Family level identification Single Habitat Sampling Procedure. Various characteristics such as taxa richness, functional feeding groups, biotic index, and the presence/absence of Ephemeroptera (mayflies), Plecoptera (stone flies), and Trichoptera (caddis flies) will be evaluated to determine population abundance and species diversity.

Water samples will be collected at a minimum of one station per stream reach to further assess water quality and nutrient and sediment inputs. Parameters such as dissolved oxygen, total suspended solids, E. Coli, ammonia, nitrogen, biochemical oxygen demand, phosphorus, turbidity, temperature, pH, conductivity, and hardness will be tested and analyzed by a certified laboratory.

Stream stability will be measured at each cross-section station using the *Watershed Assessment of River Stability and Sediment Supply (WARSSS)* (Rosgen, 2006b; USEPA 2006) method and include the geomorphic characterization, morphological description, stream condition prediction and reach specific validation at each station.

Existing Conditions

The proposed Mossy Creek Umbrella Mitigation Bank is composed of nine, separate parcels consisting of approximately 1,266.23 acres located north of the City of Staunton and southeast of the City of Harrisonburg in the North River District of Augusta County (see Vicinity Map, Exhibit 1). Below is a list of the properties with their latitudes and longitudes:

Table 1: Property Geographic Location

Farm	Tax Map #	Latitude	Longitude	Acreage (AC.)
Mossy Creek Farm	010-104	38-20-51	79-03-52	167.45
Reeves Farm	010-111	38-20-49	79-04-02	120.64
Long Glade Creek Farm	011-29	38-20-10	79-01-38	367.42
North River Farm	004-109	38-23-02	79-03-56	79.91
Freemason Run Farm	010-80	38-20-23	79-06-33	99.12
Arey Farm	010-92	38-20-04	79-05-50	85.60
Upper Mossy Creek	010-98	38-20-04	79-05-00	238.84
Byerly Farm	010-103	38-20-40	79-03-46	101.35
Lower Mossy	11-3	38-21-16	79-02-49	5.90

Mossy Creek Farm is located on the south side of Mossy Creek Road approximately 1.4 miles north-northeast from the intersection of Mossy Creek Road and Natural Chimneys Road and approximately 2.0 miles south-southwest of the intersection of Route 42 and Mossy Creek Road (see Vicinity Map, Exhibit 1).

General Setting

The sites are located within the Central Shenandoah Valley region of the Ridge and Valley Physiographic Province of Virginia. More specifically, the Mossy Creek site is situated approximately 0.7 miles east from Natural Chimneys Regional Park and approximately 4.9 miles east of Lookout Mountain, part of the George Washington National Forest (see USGS Parnassus Quadrangle Map). The properties range in distance of 2.1 miles to 6.6 miles from Lookout Mountain. The sites contain a mixture of level, rolling and steep topography with numerous karst topographic features throughout the landscape. The sites topography contains elevations from 1400 feet above mean sea level (AMSL) located within the western sites and 1260 feet AMSL located within the eastern sites (140 feet of elevation change).

The nine parcels, consisting of approximately 1,266 acres, are currently being used for agricultural livestock and crop production by Mossy Creek Cattle, LLC and Byerly Farms. The properties have a mixture of pasture, cropland, and scattered areas of pine, cedar, and hardwood forest, which are mostly contained along ridgelines and toe slopes. Surrounding land uses are very similar to what is present onsite. The cropland portions of the property consist of alfalfa, orchardgrass, fescue, corn, soybean, wheat, rye and barley. There is a beef cattle operation consisting of approximately 2,360 Black Angus/Herfords within seven of the nine sites (North River Farm and the Freemason Run Farm are used primarily for crop production for livestock feed (see Existing Conditions Map, Exhibit 5).

The MCNRUMB sites are located within the Upper North River watershed of the South-Fork Shenandoah River basin (hydrologic unit code: 02050005). The sites contain portions of Freemason Run, Long Glade Creek, Upper North River and Mossy Creek, which all drain to the North River.

Geology/Soils

The Valley & Ridge Physiographic Province consists of elongate parallel ridges and valleys that are underlain by folded Paleozoic sedimentary rock. The geology in the region is the Conococheague Formation primarily comprised of limestone, dolomite, and calcareous sandstone. The characteristic topography of this region is the result of differential weathering of linear belts of rocks that have been repeated by folding and faulting. Cambrian clastic sediments of the western Blue Ridge are overlain by carbonates that made up the Great American Bank. For at least 70 million years carbonates were deposited in a shallow tropical ocean along the southeast edge of North America. Today these carbonates (up to 3.5 km in thickness) are exposed in the Great Valley (known as the Shenandoah Valley in central and northern Virginia), the easternmost portion of the Valley & Ridge province. Well-developed karst topography is characteristic of the Great Valley and many caverns are located in the subsurface.

By middle Ordovician time, clastic sediments were shed from highlands marking the onset of the Taconic orogeny. The Taconic orogeny uplifted mountains to the east (in the Piedmont). Late Ordovician and Silurian rocks of the Valley & Ridge record the uplift and subsequent erosion of the Taconic Mountains. By the late Silurian carbonates were again being deposited in this region. Deposition of sediments continued from the Silurian through the Carboniferous in the foreland (i.e. the Valley & Ridge and Appalachian Plateau) and record pulses of uplift & mountain building to the

east. Continental collision in the late Paleozoic produced a fold and thrust belt in which the Blue Ridge was imbricated and thrust northwestward over the Paleozoic cover rocks. Paleozoic sedimentary rocks of the Valley & Ridge were also folded and moved westward along thrust faults. The Great Valley is underlain by a two-tier duplex in which the entire Cambro-Ordovician sequence is repeated. Between 50 and 75% shortening occurred in western Virginia during the late Paleozoic deformation event known as the Alleghanian orogeny (Information courtesy of The College of William and Mary, *The Geology of Virginia)*.

Soils in this area are generally formed from dolomitic and cherty limestone with an intermingling of alluvium formed from limestone, sandstone and shale and colluvium derived from sandstone and shale. The majority of soil series on the target properties are deep and well drained with moderate permeability. The majority of soils formed from residuum of dolomitic and cherty limestone are generally found on adjacent hill slopes and steep slopes. Soils within the Ralston Farm and North River Farm are generally formed from alluvium and residuum from sandstone and shale, while soils within the valley floors of the spring-fed streams are formed from alluvium from limestone, shale and sandstone. These areas have gently sloping topography and can be occasionally to frequently flooded throughout the spring and summer months. These soil series are found extensively throughout the Ridge and Valley Physiographic Province and surrounding areas and are primarily used for cultivated crops. The Frederick-Christian soils complex is commonly found on the slopes of the MCNRUMB site. Due to the steep nature of the topography and frequency of limestone rock outcrops, these areas are typically used for pasture or remain wooded.

The Bank is comprised of these twenty (20) major soil types:

1) Buckton silt loam (14) 0-4% slopes, occasionally flooded, well drained
2) Edom silt loam (30B-C2) 2-15% slopes, well drained
3) Edom-Rock Outcrop Complex (32C-E2), 0-45% slopes, eroded, well drained
4) Endcav silt loam (35B-C2), 2-15% slopes, eroded, well drained
5) Frederick-Christian silt loam (40B-D2), 2-25% slopes, eroded, well drained
6) Frederick- Christian gravelly silt loam (42B-E2), 2-45% slopes, well drained
7) Frederick-Christian very gravelly silt loam (43D-E), 15-45% slopes, well drained
8) Nixa very cherty silt loam (64C), 2-15% slopes, moderately well drained

9) Opequon Rock Outcrop Complex (65E), 7-45% slopes, well drained

10) Rock outcrop – Frederick complex (70C-E), 2-45%, well drained

11) Timberville silt loam (79B), 0-7% slopes, frequently flooded, well drained

12) Udifluvents (82), 0-3% slopes, occasionally flooded, moderately well drained

13) Christian fine sandy loam (24C-D2), 7-25% slopes, well drained

14) Fluvaquents (39), 0-5% slopes, frequently flooded, poorly drained

15) Frederick-Christian silty clay loam (41C-D3), 7-25% slopes, very eroded, well drained

16) Bookwood silt loam (10B-D2), 2-25% slopes, eroded, well drained

17) Chavies fine sandy loam (19), 0-4% slopes, rarely flooded, well drained

18) Sherando cobbly sandy loam (78C-E2), 2-45% slopes, well drained

19) Craigsville cobbly sandy loam (28), 0-5% slopes, rarely flooded, well drained

20) Millrock loamy fine sand (61B), 0-4% slopes, frequent flooding, well drained

Soil Type 14 is listed as "All Hydric" and Soil Type 2-11 and 15-20 are listed as "Not Hydric." Soil Types 1 and 12 are listed as "Partially Hydric" (see Soil Survey Appendix B).

Hydrology/Aquatic Resources

The properties contain unnamed intermittent and perennial tributaries as well as portions of Freemason Run, Long Glade Creek, and Mossy Creek, which ultimately drain northeast to the North River. The North River drains south-southeast from Bridgewater to Weyers Cave, near the confluence of the Middle River and North River. The River flows northeast from there to Port Republic, where the North-Middle Rivers meet the South River, which becomes the South Fork of the Shenandoah River, which is approximately 14 miles southeast of Mossy Creek Farm.

The table below and Exhibit 2, Watershed Map, provide information concerning watershed size and stream order. The stream order was calculated using the Modified Horton Method.

Table 2: Watershed Characteristics

PROPERTY		Watershed Characteristic for Select Streams			
Name	**Tax Map**	**Reach Name**	**Drainage Area (mi^2)**	**Length of stream upstream of property (ft)**	**Stream Order**
Freemason Run Farm	10-80	R1 Freemason Run	8	31737	3
Upper Mossy	10-98	R2-R3 Mossy Creek	5	9265	3
Mossy Creek Farm	10-104	R4-R7 Mossy Creek	10.85	18323	3
Lower Mossy	11-3	R8 Mossy Creek	12.11	28340	3
Long Glade Farm	11-129	R9-R10	0.58	2783	2
Long Glade Farm	11-129	R11	9.58	25320	3
Long Glade Farm	11-129	R12	0.24	0	1
North River	4-109	R13	0.49	4000	2
North River	4-109	R14	0.16	Indeterminate	2
North River	4-109	R15-R16 North River	76.5	142290	5

The property's hydrology is supplied by surface water associated with the surrounding landscape and groundwater-fed springs, wetland seeps and systems located along the drainage ways. The springs, seeps and wetland systems provide essential base flow and recharge to all stream channels. There are approximately 0.32 acres of open water and 16.00 acres of palustrine, emergent wetlands located on the properties (See Existing Conditions Map, Exhibit 5).

There are approximately 24,909 linear feet of streams within the limits of the Bank. The Bank is located in a Type V "U" shaped valley characterized by moderately steep valley slopes and wide alluvium and colluvium valley bottoms that range in elevation from 1,400 to 1,250 feet.

Streams within the project area have altered from their natural condition due to manmade alterations (channel straigtening and vegetation removal) and watershed land use practices associated with agricultural practices including impacts from livestock, rural development, and silvicultural practices. Streams in the watershed are currently impaired due to overwidening, a simplification of the bed-form, a reduction of hyporheic exchange, fine sediment aggradation, excessive channel erosion from lateral migration and downcutting. These impairments have contributed to the degradation of aquatic and terrestrial life.

Impacts associated with livestock include: 1) Over widened and eliminated well defined channel dimension, 2) increased sediment deposition and embeddedness, 3) decreased bank stability and

vegetative cover, 4) increased bacterial contamination and 5) degraded epifaunal substrate and trout spawning conditions. The aggradation of fine sediment due to livestock and eroding stream banks is of particular concern because of the recreational use of this stream as a trout fishery. Currently the impact prevents trout spawning and impacts quality of habitat.

In addition to livestock impacts, open pasture and absent or narrow riparian buffers have impacted aquatic resources in the following ways: 1) eliminated and degraded available refugia and epifaunal substrate, 2) decreased bank stability and vegetative cover, 3) limited shade and temperature regulation, 4) decreased and eliminated (in certain areas) the supply of organic matter for food and habitat.

Watershed Land Uses

A watershed study was conducted for the Bank's watershed. The focus of this study was to determine the land use within the stream corridor and the amount of conservation practices within the watersheds. Below is a chart of the data that was collected. Land uses were broken down into eight (8) categories: Future restoration, forested, CREP/Buffers, Mix of Forest/Land Uses, Crop, Hay, Pasture/No Livestock Exclusion, and Maintained Turf/Residential. The values are expressed as a percentage of the total linear stream length of each stream body.

Table 3: Watershed Land Use Summary

Watershed	Total Reach Length	Future Restoration	Forested	CRP/ Buffer	Mixed Land Use	Crop	Hay	Pasture/No Livestock Exclusion	Maintained Turf/Residential
Mossy Creek	36,468'	27.4	6.03	20.9	2.17	0	0	65.6	4.92
Long Glade Creek	45,523'	13.51	5.33	57.13	13.26	0	1.41	22.87	0
Freemason Run	38,910	4.19	19.19	80.81	0	0	0	0	0
North River	16,127'	7.98	42.37	5.66	0	36.74	0	10.76	4.47

The watershed is primarily comprised of agricultural and forested land uses and is within an Agricultural Conservation Area in Augusta County. It is unlikely that these watershed conditions will change significantly. A detailed study of land uses and practices will be considered prior to submittal of the Mitigation Banking Instrument.

A watershed study to determine the amount of properties under conservation easement within the targeted Upper North River watershed was also performed (for location of easements, see Watershed Map, Exhibit 2). The approximate watershed limits start from their headwaters in the George Washington National Forest to the Town of Bridgewater. There are a total of five Virginia Outdoors Foundation (VOF) Easements upstream of the Bank including one on the Sponsor's Arey Farm. In addition there is also protected land upstream from the Bank associated with the National Forest and Natural Chimneys Regional Park. The parameters of the study include easements contiguous to the stream, easements within the larger watershed (not contiguous to the stream), and the affected acreage of each. Please see the table below:

Table 4: Watershed Easement Accounting

Watershed	# of Easements contiguous to Stream	Acreage Affected by Easement	# of Easements within overall Watershed	Acreage Affected within Watershed
Mossy Creek	2	171.98	0	0
Long Glade Creek	1	278.7	0	0
Freemason Run*	1	226.5	1	101.78
North River*	1 (Natural Chimneys)	419.66	0	0

* These numbers do not reflect the amount of acreage protected within the George Washington National Forest. The headwaters of each of these streams begin within the limits of the GWNF.

Vegetation

There are four different vegetative communities located within the site. Please refer to the table below for these community types and their affiliated flora.

Table 5: Vegetative Community

PASTURE Tall Fescue (*Festuca arundinacea)* Orchardgrass *(Dactylis glomerata)* Kentucky Bluegrass *(Poa Pratensis)* White Clover *(Trifolium repens)* Red Clover *(Trifolium pratense)* Barnyardgrass *(Echinochloa crusgalli)*	UPLAND FOREST Eastern Red Cedar *(Juniperus virginiana)* Osage Orange *(Maclura pomifera)* Black Walnut *(Juglans nigra)* Tulip Poplar *(Liriodendron tulipifera)* White Oak *(Quercus alba)* Elderberry *(Sambucus nigra)*
WETLAND/RIPARIAN Coral-berry (*Symphoricarpos orbiculata)* Small-fruit Bulrush *(Scirpus microcarpus)* Soft Rush *(Juncus effusus)* Spearmint *(Mentha spicata)* Soft-stem Bulrush *(Scirpus validus)* Water-cress *(Nasturtium officinale)* Marsh-marigold *(Caltha palustris)* Rice Cutgrass *(Leersia oryzoides)* Pale-touch-me-not *(Impatiens pallida)*	INVASIVE/NOXIOUS Johnsongrass *(Sorghum halepense)* Curly Doc *(Rumex crispus)* Tree of Heaven *(Ailanthus altissima)* Multiflora Rose *(Rosa multiflora)* Bull Thistle *(Cirsium vulgare)*

New York Ironweed *(Vernonia noveboracensis)* Slender Rush *(Juncus tenuis)* Swamp Rose *(Rosa palustris)* Broadleaf Cattail *(Typha latifolia)* Swamp Milkweed (*Asclepias incarnata*) Ironwood (*Carpinus caroliniana)* Hackberry (*Celtis occidentalis)* Persimmon (*Diospyrus virginiana)* Ninebark (*Physocarpus oppuifolius)* American Sycamore (*Platanus occidentalis)*	

Terrestrial Wildlife/Threatened and Endangered Species

Most of the wildlife species observed on the property are typical for the region given the existing habitat condition. The avian species include downy, hairy and red-bellied woodpeckers, northern flicker, eastern phoebe, Carolina chickadee, tufted titmouse, white-breasted nuthatch, red-eyed vireo, American goldfinch, indigo bunting, cedar waxing, blue jay, eastern towhee, northern cardinal, dark-eyed junco, grasshopper sparrows, barn swallows, eastern bluebird, red-wing black bird, eastern meadowlark, northern harrier, red-tailed hawk, barred owl, great horned owl, wild turkey, northern bobwhite quail, mourning dove, wood duck, mallard duck, hooded merganser and Canada goose. Butterflies include pipevine swallowtail, great spangled fritillary, silver spotted skipper, eastern tiger swallowtail, monarch, spicebush swallowtail, pearl crescent and queen. Mammals include white-tailed deer, black bear, skunk, opossum, bobcat, coyote, red fox, gray squirrel, rabbits, chipmunk, and ground hog. Reptiles include eastern box turtle, painted turtle, snapping turtle, fivelined skink, eastern fence lizard, eastern king snake, black racer, hognose snake, eastern milk snake, copperhead, northern water snake, eastern garter snake and rat snake.

Information pertaining to the presence and/or absence of rare, threatened and endangered species and communities has been acquired as well. VDGIF Fish and Wildlife Information System (FWIS) has provided a list of documented or likely to occur rare, threatened, and endangered species including flora and fauna within a two-mile radius (see Appendix G). There are one hundred and eight (108) tier level I-IV species on the list. Of the 108 species, there are three species that have documented presence within a two-mile radius of the property. A Loggerhead Shrike *(Lanius ludovicianus)* was documented on June 7, 2012 on the Long Glade property by representatives of Ecosystem Services, LLC, property owner Ernie Reeves, U.S. Army Corps of Engineers representative Vinny Pero and Eric Willard of the Virginia Department of Environmental Quality during the delineation confirmation site visit for the MCNRUMB. A second sighting of a loggerhead

shrike at the Long Glade Creek property was observed by Ecosystem Services Staff, Jon Roller and Brian Wagner, on August 17, 2012. Paul Bugas, Virginia Department of Game and Inland Fisheries biologist, has reported the presence of Allegheny Pearl Dace (*Margariscus margarita)* (S3) and Slimy Sculpin (*Cottus cognatus)* (S2) on Mossy Creek and the North River. Of the 33 bird species, the property may contain suitable habitats for two listed species, which are Bewick's Wren (*Thyromanes bewickii)* and the Barn Owl *(Tyto alba pratinola)*. The properties also contain suitable habitat for the Wood Turtle *(Glyptemys insculpta)* and Spotted Turtle *(Clemmys guttata).*

The project lies within the likely range of the Madison Cave Isopod (*Antrolana lira)*, which is a federally-threatened groundwater, obligate crustacean species endemic to the Shenandoah Valley and portions of the Great Valley south to Lexington, Virginia. This species was actually discovered in 1958 in Madison Salt-petre Cave in Augusta County.

Table 6: Threatened and Endangered Species

Common Name	Scientific Name	Common Name	Scientific Name
Bat, Virginia big-eared	*Corynorhinus townsendii virginianus*	Isopod, Madison Cave	*Antrolana lira*
Wren, Bewick's	*Thryomanes bewickii*	Salamander, eastern tiger	*Ambystoma tigrinum*
Shrew, American water	*Sorex palustris*	Floater, brook	*Alasmidonta varicosa*
Turtle, wood	*Glyptemys insculpta*	Falcon, peregrine	*Falco peregrinus*
Sandpiper, upland	*Bartramia longicauda*	Shrike, loggerhead	*Lanius ludovicianus*
Amphipod, Madison Cave	*Stygobromus stegerorum*	Skipper, Appalachian grizzled	*Pyrgus wyandot*
Eagle, bald	*Haliaeetus leucocephalus*	Floater, green	*Lasmigona subviridis*
Shrike, migrant loggerhead	*Lanius ludovicianus migrans*	Fritillary, regal	*Speyeria idalia idalia*
Shiner, roughhead	*Notropis semperasper*	Fritillary, diana	*Speyeria diana*
Salamander, Big Levels	*Plethodon sherando*	Turtle, spotted	*Clemmys guttata*
Rattlesnake, timber	*Crotalus horridus*		

In addition to these species, brown trout are currently stocked downstream of the project reach by the Virginia Department of Game and Inland Fisheries. There is also documented presence of native Brook Trout in the North River and Mossy Creek.

VDGIF will be consulted with to determine any appropriate time of year restrictions.

Water Quality

Benthic Macroinvertebrates

Baseline data will be collected prior to the first submittal of the Draft Mitigation Banking Instrument (MBI). The Sponsor's agent proposes to establish a representative number of Bioassessment stations to evaluate various characteristics such as taxa richness, functional feeding groups, biotic index, and the presence/absence of Ephemeroptera (mayflies), Plecoptera (stone flies), and Trichoptera (caddis flies) to determine population abundance and species diversity.

Due to the poor to mediocre habitat quality and quantity, we expect to find populations of pollution tolerant Macroinvertebrates coupled with small populations of different taxa, and the dominance of three functional feeding groups, which would indicate in-stream habitat and water quality is in poor condition.

Chemical Characteristics

Chemical data will be acquired from the Bioassessment stations. We expect to find levels of nitrogen and phosphorus in excess of the Virginia State Water Quality Standard. E.Coli, Total Suspended Solids (TSS), and turbidity will also be tested at each station.

Mossy Creek Cattle, LLC currently has a NRCS-certified nutrient management plan for all properties within the MCNRUMB. This plan ensures that manure from the poultry and beef cattle operations, coupled with other commercial fertilizers is being applied at the acceptable rate to the cropland, hay ground and pasture portions of the property. However, without sufficient vegetated riparian buffers, livestock exclusion, watershed preservation, and stable stream channels, these nutrient inputs are not minimized. As a result, there is insufficient uptake, filtration, and capture of nutrients and sediments.

Conceptual Mitigation Plan

Overview

The purpose of the proposed mitigation plan is to produce the highest ecological benefit to Mossy Creek, Long Glade Creek, Freemason Run, North River and all their tributaries while implementing restoration activities that require minimal earthwork and maintenance. Livestock exclusion, watershed preservation, riparian buffer planting, stream bank bioengineering, stream restoration,

and invasive species removal are the main types of proposed mitigation activities (see Conceptual Mitigation Plan attachment, Exhibit 6).

According to Wil Orndorff, DCR Karst Protection Coordinator, key mitigation areas that will help produce the highest level of water quality and habitat (riparian and in-stream) improvements are the headwater springs and stream sections with subterraneous flow because they are most susceptible to groundwater contamination from livestock and other agricultural practices. Such streams are present on the Long Glade Creek property.

Sources of groundwater contamination will be removed by implementing the proposed mitigation activities. Subterranean habitat conditions for Macroinvertebrates such as isopods will also greatly improve as a result of the proposed restoration activities.

Restoration Methodology

Given the nature of the impairments and the rural characteristics of the watershed, it is recommended that restoration activities based on Natural Channel Design principles be implemented to restore the streams to a natural functioning condition capable of providing improved ecologic value. Natural Channel Design emulates the mechanics, geomorphology, and ecologic function of natural stable streams in a particular setting using a combination of analog, empirical, and analytic design approaches. This methodology requires that the designer assess the accuracy and applicability of each approach and look for converging lines of evidence to arrive at a suitable design after a thorough study of the project watershed.

Any restoration activity should take into consideration existing and likely constraints that may impact restoration goals and success. Proposed restoration practices will assess upstream land uses and future hydrologic and sediment regime. Effects of upstream agricultural land uses will be anticipated to ensure restoration success. For example, increased sediment supply will be accommodated through the design of a sediment competent stream morphology.

The mitigation activity (Restoration, Enhancement, or Preservation) will be decided after considering stream condition, stage in channel evolution, and likelihood for success. Restoration construction will be conducted to limit the amount of in-stream work and the disturbance of valuable ecological resources. All unavoidable impacts to existing streams or wetlands will be self-mitigating in nature.

Geomorphic Survey

Ecosystem Services will conduct a geomorphic survey of all streams that are to receive restoration practices and upstream or downstream reference reaches as appropriate. Other streams in the region including Moffett Branch, Spring Creek, Naked Creek, Beaver Creek, East Dry Branch, Buffalo Branch, and Briery Branch have been visually inspected and data will be collected as needed to supplement analog hydraulic geometry, vegetation and habitat conditions. The geomorphic survey will include a longitudinal profile through the project reach, pool and riffle cross-sections, substrate analysis, and topographic detail site features and floodplain as necessary for the proposed restoration activities. These tasks will be completed using applicable survey and field procedures as outlined in the North Carolina Stream Restoration Institute and North Carolina Sea Grant publication Stream Restoration: A Natural Channel Design Handbook as well as publications by David Rosgen, US Forest Service and US Fish and Wildlife Service.

The geomorphic survey will identify stream characteristics of the existing streams in order to assess stability as well as inform the final design of the restoration practices. All geomorphic data will be compiled and reported in future Mitigation Banking documents. Initial permanent cross-sections have been installed and initial data are provided in Appendix C. In addition bank pins have been installed in these locations to monitor sediment loss and geomorphic adjustment.

Mitigation Activities and Compensation Crediting

The Unified Stream Methodology (USM) Form 3: Compensation Crediting Form was utilized to determine the amount of credits produced from the proposed mitigation activities (see Unified Stream Methodology Form #3 Appendix D). These initial estimates assume that restored lengths are equal to existing stream lengths and do not account for potential changes to planform geometry except for Reach 7 and Reach 9. Compensation credit information is summarized below:

Table 7: Mitigation Activities and Compensation Credit Summary

PROPERTY		MITIGATION ACTIVITY			CREDITS
Name	Tax Map	Preservation	Enhancement	Restoration	-
Mossy Creek Farm	10-104			3292	5551
Byerly Farm	10-103	178	1607		1071
Reeves Farm	10-111		1732		901
Long Glade Farm	11-129	567	1574	8598	14558
Freemason Run Farm	10-80		914	716	887
Arey Farm	10-92			1447	2301
Upper Mossy Farm	10-98	1000			260
Lower Mossy Farm	11-3	191			36
North River Farm	4-109	1280	1592	1287	2929
Total		3216	7419	15340	28784

Goals and Strategies of the Bank

Goal #1: Protect, conserve, and improve the ecological health of aquatic resources within the catchments of Mossy Creek, Long Glade Creek, Freemason Run and North River and improve water quality in terms of sediment, nutrients and bacteria for the North River watershed and the South Fork Shenandoah sub-basin.

Strategies:

1) Reduce nutrient/sediment inputs by establishing or enhancing riparian buffers and fencing out livestock
2) Improve nutrient and sediment trapping by increasing floodplain connectivity and restoring in-stream processes
3) Improve terrestrial/aquatic fauna community population, diversity, and habitat productivity, diversity, and food production by establishing or enhancing riparian buffers
4) Protect/conserve the existing property and its natural resources by establishing conservation easements
5) Fence off and exclude livestock access/grazing
6) Designate 100'-200' riparian buffers along aquatic resources
7) Replant riparian buffers with native herbaceous/scrub-shrub/tree species
8) Restore and stabilize degraded unstable stream channels

9) Remove invasive/noxious plant species
10) Re-establish wildlife corridors and connectivity
11) Implement legal mechanisms such as conservation easements

Goal #2: Establish an umbrella mitigation bank.

Strategies:

1) Provide offsite compensatory mitigation to unavoidable impacts to aquatic resources from development activities within the Geographic Service Area (GSA).
2) Acquire future tracts of land upstream and downstream from the proposed MCNRUMB to implement, achieve, and build on Goal #1 and its strategies.
3) Enroll the Bank and future mitigation sites in permanent conservation easements.

Goal #3: Increase and enhance community recreation, education, and public interest.

Strategies:

1) Develop and employ volunteer opportunities, workshops, and training sessions related to natural science, ecosystem restoration, and watershed protection with local communities, schools, colleges, and universities such as James Madison University and Mary Baldwin College.
2) Work with willing property owners to expand community and public access to the water and public fishing where appropriate.

Compatibility

By achieving and implementing the goals and strategies stated above, the Bank Sponsor can ensure compatibility with the following goals stated in the 2007 Augusta County Comprehensive Plan:

1) *Protect the fundamental integrity of the county's natural environmental systems into the long-term future for the enjoyment and benefit of local citizens, businesses, tourism, recreation, and other species that co-exist within the country.*
2) *Protect the water, air, natural systems, and water supplies of Augusta County.*
3) *Protect the natural and scenic beauty of the county's mountains and rural landscapes.*
4) *Protect the county's forests and special and distinctive habitats.*

5) *Participate in state and regional programs to protect local waterways, the Shenandoah River, and the Chesapeake Bay.*
6) *Sustain the natural resources base that allows for productive, healthy, and environmentally-sound agricultural and forestry land uses.*
7) *Promote agricultural and forestry operations that protect water quality and water resources.*
8) *Protect the quality and quantity of groundwater as the primary source of drinking water for county residents and as a source of water to springs and headwater streams.*
9) *Protect the quality and quantity of groundwater that serves private, individual wells and provides source water to springs and headwater streams.*
10) *Protect groundwater in karst areas.*
11) *Support the placement of conservation easements on property located in the Rural Conservation and Agricultural Conservation Areas.*
12) *Support programs and strategies for farmers to ensure that their operations are both profitable and environmentally sound.*
13) *Promote the local tourism industry, including the conservation of the agricultural, historic, and environmental resources that fuel it*
14) *Promote reforestation and 100' Riparian Buffers in Agricultural Conservation Areas*

The Bank Sponsor has received support from various organizations, including the Augusta County Community Development Department. The proposed project received full support of the Department because the project meets and helps to fulfill Augusta County's Comprehensive Plan's goals and objectives stated above. Other project supporters and partners include Headwaters Soil and Water Conservation District, Trout Unlimited, United States Fish and Wildlife Service, Valley Conservation Council, Virginia Conservation Network and the Virginia Wilderness Committee.

Establishment of the Bank

Umbrella Mitigation Banking Instrument (UMBI)

The UMBI and the development and operation of the Bank will be in accordance with the most current version of the Mitigation Banking Template provided by the Norfolk District, Army Corps of Engineers, the Code of Virginia Section 33.1-223.2.1 Wetland Banking and the *Compensatory*

Mitigation for Losses of Aquatic Resources; Final Rule – Parts 33 CFR 325 and 332 (Department of the Army; Corps of Engineers) & Parts 40 CFR Part 230 (Environmental Protection Agency). The land owner, Mossy Creek Cattle, LLC, will be responsible for annual management and operations of the proposed bank. The Bank site proposes restoration, enhancement and preservation of streams and associated riparian systems/corridors specifically for the purpose of generating compensation credits. Mossy Creek Cattle, LLC will provide for the long-term preservation and management of the proposed Bank site.

Permits

Ecosystem Services, LLC, on behalf of the property owners, will obtain all documentation, permits, and other authorizations required to establish and maintain the Bank.

Bank Development Plan

Ecosystem Services, LLC, on behalf of Mossy Creek Cattle, LLC, will prepare an UMBI that will represent the framework for the proposed site. The proposed Bank will be included in the UMBI and developed conceptually, and in final form, through the Site Development Plan (SDP). This documentation will be submitted and presented to the IRT for review and approval. Development of the proposed site will be initiated with the submission of the conceptual SDP for the IRT to evaluate. Upon receiving a conceptual approval by the IRT, Ecosystem Services, LLC will proceed with the preparations for the development of the final SDP. As with the conceptual SDP, the final documentation will also be forwarded to the IRT for review and approval. Upon receiving final approval of the SDP from the IRT, the documentation will be included as an Addendum to the UMBI. As a result, the proposed mitigation bank site will then be deemed a component of the UMBI. Fifteen (15) percent of the credits will then be released consistent with the schedule of credit availability in accordance with the final SDP. An approved bank site, or an approved phase of the bank site, may be left undeveloped if no pre-sale or other credits have been debited for the site in the event the final SDP is not approved, the IRT will provide Mossy Creek Cattle, LLC with specified reasons for not approving the submittal. Furthermore, Ecosystem Services, LLC may then re-submit a revised final SDP with the specific modifications and/or justifications that address the IRT's concerns.

Financial Assurances

Mossy Creek Cattle, LLC will provide financial assurances for the proposed site as part of the individual SDP acceptance forms of financial assurance that will be established in the UMBI.

Real Estate Provisions

Mossy Creek Cattle, LLC will record a restrictive covenant easement, or similar maintenance agreement with regards to the proposed bank. This agreement may also be transferable to an acceptable conservation organization upon fulfillment of project objectives with proposed Bank ownership remaining with the titled owner. Mossy Creek Cattle, LLC will provide the perpetual protection and preservation of the proposed bank site through maintenance agreements, restrictive covenants, and/or conservation easements. These provisions will conform to current Norfolk District Army Corps of Engineers guidance with language allowing road easements, road/bridge crossings, hiking paths and trails, and other activities. Each real estate instrument used must be approved by the IRT.

Operation of the Bank

Geographic Service Area

Per the requirements stated in 33 CFR §332.8(d)(6)(ii)(A) the proposed GSA of the MCNRUMB is the South Fork Shenandoah River sub-basin (HUC: 02050005), the North Fork Shenandoah River basin (HUC: 02050006), the Shenandoah River basin (HUC: 02050007), the South Branch Potomac River basin (HUC 02070001), and the Conococheague-Opequon River sub-basin (02070004). The Conococheague-Opequon is an underserved hydrologic service area in the northern Shenandoah Valley within the same 6-digit HUC. This area is located in close proximity to the other adjacent HUCs. Though the Conococheague-Opequon River sub-basin is not directly adjacent to the Project HUC, the inclusion of this basin is justified pursuant to guidance in the abovementioned Section of the Code of Federal Regulations for rural areas in which "several contiguous 8-digit Hucs or a 6-digit HUC watershed may be an appropriate service area." The proposed service area will include all of, or portions of the counties of Augusta, Highland, Rockingham, Page, Warren, Shenandoah, Clarke and Frederick as well as the Cities of Staunton, Waynesboro, Harrisonburg, and Winchester shown in the Geographic Service Area Map (Exhibit 4).

Table 8: Virginia GSA Summary

COUNTY/CITY	8-DIGIT HYDROLOGIC UNIT CODE				
	2070005	*2070006*	*2070007*	*2070004*	*2070001*
Augusta					
Staunton					
Waynesboro					
Rockingham					
Harrisonburg					
Page					
Warren					
Shenandoah					
Frederick					
Winchester					
Clarke					
Highland					

Conditions on Debiting (Credit Availability/Accounting Procedures)

Ecosystem Services, LLC, on behalf of the property owner, will establish and maintain a banking ledger, which documents credits and debits to the proposed Bank account. Each time an approved debit/credit transaction occurs, Ecosystem Services will submit a statement to the permitting agencies. Ecosystem Services will also generate an annual ledger report to be submitted to all members of the IRT. The ledger will be available for inspection upon written request by any of the participating agencies.

Establishment of Credits

An evaluation of the credit analysis will be performed by the IRT to determine the exact amount of credits the ownership can expect as a result of bringing this proposed bank on-line. A conceptual Site Development Plan (SDP) will be prepared and submitted to the IRT for review. The final calculation of the anticipated credits generated, as a result of the proposed site, will be determined by the IRT based upon final approval of the SDP. The mitigation credits will be made available in accordance with current guidance published by the COE and Department of Environmental Quality (DEQ).

Use of Credits

The following types of projects may be eligible to use the MCNRUMB compensation credits to fulfill compensatory mitigation requirements:

1. All activities regulated under Section 10 of the Rivers and Harbors Act, Section 404 of the Clean Water Act and/or Virginia Water Protection Permit Regulations (9 VAC 25-210) located within the GSA of this wetland and stream bank may be eligible to use the Bank as compensatory mitigation for unavoidable impacts.

2. Credits may be used to compensate for environmental impacts under other programs (civil works, Superfund removal and remedial, supplemental environmental projects for state and Federal enforcement actions, etc.)

3. For projects within the GSA of the Bank that require authorization with a Nationwide Permit (NWP) under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act, Norfolk District State Program General Permit (SPGP), and/or a Virginia Water Protection Permit, and if authorization requires compensatory mitigation requirements if the Bank Sponsor and the third party permittee reach a mutually acceptable financial agreement and subject to regulatory approval on a case by case basis.

4. For projects within the GSA of the Bank that require authorization with an Individual Permit (IP) under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act and/or Virginia Water Protection Permit, the USACOE and Virginia Department of Environmental Quality (VDEQ), in consultation with the other regulatory agencies, will determine the eligibility of such projects to use the Bank on a case-by-case basis. Once the USACOE and/or VDEQ have determined that mitigation in the Bank the ecologically-preferable alternative, mitigation may be provided by the use of the mitigation credits from the Bank as determined by the USACOE and/or the VDEQ for each agency's respective permits if the Bank Sponsor and the third party permittee reach a mutually acceptable financial agreement.

5. Limited use of the Bank for projects outside the GSA will be considered by the IRT on a case-by-case basis.

DISCLAIMER:

The UMBI will not supersede or alter the statutory authorities and responsibilities, regulations, policies, and guidance of the signatory agencies or any other group.

Maintenance and Monitoring of the Bank

Maintenance, Monitoring, and Success Criteria

Prior to the release of credits, Mossy Creek Cattle, LLC will provide appropriate financial assurance acceptable to the IRT in accordance with the terms of the UMBI and the final SDP. The financial requirements will be reduced over time as the SDP is implemented. Ecosystem Services will ensure all monitoring and maintenance will be undertaken during the success criteria period. Ecosystem Services will provide maintenance and monitoring in accordance with the terms and conditions outlined in the UMBI and SDP. Monitoring will include data collection for the indicators of success specified for the site. Monitoring reports will be submitted to the IRT according to the schedule set forth in the SDP and will be used to evaluate site performance relative to the performance established in the SDP. Remedial actions to the Bank site may be necessary during operational life of the Bank. If Ecosystem Services has followed the SDP, but performance criteria are not being met, the IRT will assist in the development of measures to meet performance criteria while holding additional cost to a minimum.

Long-Term Protection

Consistent with the conditions of the UMBI, a maintenance agreement, conservation easement or declaration of restrictive covenants will be recorded prior to the sale of any credits to assure preservation of these lands in perpetuity. Copies of documents of long-term protection measures will be included in the SDP. The approved and debited credits in the proposed site will be retained in perpetuity by Mossy Creek Cattle, LLC. Decisions concerning the operational life of the proposed mitigation bank, long-term monitoring/management, remedial actions, and financial assurances will be made in accordance with the *Compensatory Mitigation for Losses of Aquatic Resources; Final Rule – Parts 33 CFR 325 and 332 (Department of the Army; Corps of Engineers) & Parts 40 CFR Part 230 (Environmental Protection Agency).* These decisions will be agreed upon in the final SDP signed by the ownership, bank management, and the participating parties.

The +/- 1,266-acre properties included in the MCNRUMB are managed by the Sponsor and owned by the Sponsor and his family except for the Byerly Farm, which the owner, Thomas Byerly, is a willing participant and investor in the Bank. Portions of the MCNRUMB are currently placed in conservation easements managed by the Virginia Outdoors Foundation (VOF). Additional areas are being considered for placement under easement. The conservation easements will help protect the Mossy Creek, Long Glade Creek, Freemason Run and North River catchments from future land use changes that may negatively impact the aquatic resources within it.

Long-Term Maintenance

The Long-Term Management and Maintenance Plan will contain specific objectives and performance standards. The Long-Term Steward will document that it is achieving each objective or standard by submitting status reports to the IRT on a schedule approved by the IRT. A primary goal of the Bank is to create a self-sustaining natural aquatic system that achieves the intended level of aquatic ecosystem functionality with minimal human intervention, including long-term site maintenance. Natural changes to the vegetative community, other than changes caused by noxious weeds, that occur after all Bank performance standards have been met are not expected to require remediation.

The Long-Term Management Plan will include the following requirements:

1) To periodically patrol the Bank site for signs of trespass and vandalism. Maintenance will include reasonable actions to deter trespass *(e.g. mark property boundaries and post "No Trespass")* and repair vandalized Bank features *(e.g. collect and dispose of rubbish including "white goods" and roofing shingles).*
2) To monitor the condition of structural elements and facilities of the Bank site such as signage, fencing, roads, and trails. The Long-Term Management and Maintenance Plan will include provisions to maintain and repair these improvements as necessary to achieve the objectives and functional performance goals of the Bank and comply with the provisions of the real estate instrument providing protection to the site. Improvements that are no longer needed to facilitate or protect the ecological function of the Bank site may be removed or abandoned if consistent with the terms and conditions of the recorded real estate instrument.

3) To inspect the Bank site annually to locate invasive species. Any invasive plant species discovered on the Bank site and occupying more than 5% cover in any given cell, field, or block must be eradicated. In the event the IRT determines that the watershed within the Bank is located becomes infested with these species in the future, so that their effective control on the Bank site is either no longer practicable or unreasonably expensive, the IRT will consider appropriate changes to the Long-Term Management Plan.

Qualifications of the Sponsor

The qualifications of the sponsor's agent and colleagues include having reviewed, assisted, and/or designed stream enhancement and restoration projects over the previous 23 years. Most recently, the sponsor's agent assisted in the formation of the proposed Pioneer Estate Umbrella Mitigation Bank, Lake Gaston Umbrella Mitigation Bank and Swift Creek Umbrella Mitigation Bank, as well as permittee-responsible stream mitigation at Diamond Hills Park for the Town of Christiansburg, Virginia, Public Private Education and Infrastructure Act Partnership. The sponsor's agent and colleagues have received training in stream and wetland mitigation as well as natural stream channel design from North Carolina State University Department of Biological and Agricultural Engineering and Stream Restoration Institute and Rosgen Level III Training.

Assurance of Water Rights

The Bank Sponsor retains and controls sufficient water rights to support the long-term sustainability of MCNRUMB.

Bank Sponsor and Adjacent Property Owners

Contact information for the Bank Sponsor, *Mossy Creek Cattle, LLC,* is provided below:

Mossy Creek Cattle, LLC
398 Mossy Creek Road
Mount Solon, VA 22843

Contact information for the Sponsor's Agent, *Ecosystem Services, LLC,* is provided below:

Ecosystem Services, LLC
270 Valentine Mill Road
Louisa, VA 23093

Adjacent property owner (APO) contact information was acquired from Augusta County GIS and is provided in Appendix E (in the form of mailing labels).

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